



# **Space Sciences Laboratory Publications and Presentations January 1–December 31, 1998**

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## TECHNICAL MEMORANDUM

### NASA REPORTS

#### Special Publications

1. Models of Plumes: Their Flow, Their Geometric Spreading, and Their Mixing with Interplume Flow. ESA SP-421, "Solar Plumes & Coronal Jets," June 1, 1998. S.T. Suess (ES82).
2. Mir Glovebox Facility. NASA CP (Johnson Space Center), Proceeding of the Second Phase I Research Results Symposium, Mountain View, CA, March 31–April 2, 1998, pp. 1–2, 10–65. R.L. Kroes and D.A. Reiss (ES76).

#### Conference Publications

1. An Overview of Electrodynamic Tether Performance in the Jovian System. NASA/CP—1998–206900, pp. 335–344, 1998. D.L. Gallagher, F. Bagenal, J. Moore, and L. Johnson (ES83).
2. Life and Microgravity Spacelab (LMS) Final Report. NASA/CP—1998–206960, 1998. J.P. Downey (ES75).
3. Tropospheric Wind Measurement from Space: The SPARCLE Mission and Beyond. NASA/CP—1998–207671/PT2, p. 553, 1998. Proceedings of 19th International Laser Radar Conference, Annapolis, MD, July 6–10, 1998. M.J. Kavaya and G.D. Emmitt (HR20).
4. Microgravity Science Laboratory (MSL-1) Final Report. NASA/CP—1998–208868, November 1998. M.B. Robinson (ES75).

## **Technical Memorandums**

1. Third United States Microgravity Payload: One Year Report. NASA/TM—1998–207891, April 1998. P.A. Curreri, D. McCauley, and C. Walker (ES75).
2. Space Sciences Laboratory Publications and Presentations, January 1–December 31, 1997. NASA/TM—1998–208534. F.G. Summers (ES01).
3. Second United States Microgravity Laboratory: One Year Report, Volumes 1 and 2. NASA/TM—1998–208697, August 1998. M. Vlasse, D. McCauley, and C. Walker (ES76).

## **Technical Publications**

1. Probability and Statistics in Aerospace Engineering. NASA/TP—1998–207194, March 1998. M.H. Rheinfurth and L.W. Howell (ES84).
2. Electrodynamic Tether Propulsion and Power Generation at Jupiter. NASA/TP—1998–208475, June 1998. D.L. Gallagher, L. Johnson, J. Moore, and F. Bagenal (ES83).
3. On the Correlation Between Maximum Amplitude and Smoothed Monthly Mean Sunspot Number During the Rise of the Cycle (From  $t=0$ –48 Months Past Sunspot Minimum). NASA/TP—1998–208591, 1998. R.M. Wilson, D.H. Hathaway, and E.J. Reichmann (ES82).
4. Volcanism, Cold Temperature, and Paucity of Sunspot Observing Days (1818–1858): A Connection? NASA/TP—1998–208592, 1998. R.M. Wilson (ES82).
5. Statistical Aspects of ENSO Events (1950–1997) and the El Niño-Atlantic Intense Hurricane Activity Relationship. NASA/TP—1998–209005, December 1998. R.M. Wilson (ES82).
6. Deciphering the Long-Term Trend of Atlantic Basin Intense Hurricanes: More Active Versus Less Active During the Present Epoch. NASA/TP—1998–209008, December 1998. R.M. Wilson (ES82).

## **Project Reports**

1. An Assessment of the Operational Utility of a GOES Lightning Mapping Sensor. Project Report NOAA–18, p. 108, MIT Lincoln Laboratory, Lexington, MA, February 13, 1998. M.E. Weber, E.R. Williams, M.M. Wolfson, and S.J. Goodman (HR20).

## OPEN LITERATURE

### Refereed Journal Articles

1. The 1.4 GHz Light Curve of GRB 970508. *Astrophys. J.*, 500, L101–L104, June 20, 1998. T. Galama, R.A. Wijers, M. Bremer, P.J. Groot, R.G. Strom, A.G. De Bruyn, C. Kouveliotou, C. Robinson, and J. van Paradijs (ES84).
2. A 1-m Radius Spherical Electron Drift Chamber for the Measurement of Relativistic Heavy Nuclei. *Nucl. Instr. and Meth. in Phys. Res.*, 402, 123–138, 1998. J.J. Petruzzo III, A.E. Smith, J.C. Gregory, C. Thoburn, R.W. Austin, T.A. Parnell, J.H. Derrickson, M.R.W. Mashedier, and P.H. Fowler (ES84).
3. Analysis of a Small Vigorous Mesoscale Convective System. Part I: Formation, Radar Echo Morphology and Lightning Behavior. *Mon. Wea. Rev.*, 126 (7), 1812–1836, July 1998. K.R. Knupp, B. Geerts, and S.J. Goodman (HR20).
4. Analysis of Auroral Morphology: Substorm Precursor and Onset on January 10, 1997. *Geophys. Res. Lett.*, 25(15), 3043, 1998. G.A. Germany, G.K. Parks, H. Ranganath, R. Elsen, P.G. Richards, W. Swift, J.F. Spann, Jr., and M.J. Brittnacher (ES83).
5. Assessment of the First and Second Generation Navy Operational Precipitation Retrieval Algorithms. *J. Atmos. Sci.*, 55, 1558–1575, May 1, 1998. W. Berg, W. Olson, R. Ferraro, S.J. Goodman, and F.J. LaFontaine (HR20).
6. The Auroral Oval Boundaries on January 10, 1997: A Comparison of Global Magnetospheric Simulations with UVI Images. *Geophys. Res. Lett.*, 25(14), 2585, 1998. R. Elsen, R.M. Winglee, J.F. Spann, Jr., G.A. Germany, M.J. Brittnacher, and G.K. Parks (ES83).
7. BATSE Observations of Gamma-Ray Burst Spectra. IV. Time-Resolved High-Energy Spectroscopy. *Astrophys. J.*, 496, 849–862, April 1, 1998. R.D. Preece, G.N. Pendleton, M.S. Briggs, R.S. Mallozzi, W.S. Paciesas, D.L. Band, J.L. Matteson, and C.A. Meegan (ES84).
8. Beta-Adrenergic Receptor Gene Expression in Bovine Skeletal Muscle Cells in Culture. *J. Animal Sci.*, 76, 2382–2391, 1998. K.Y. Bridge, C.K. Smith, and R.B. Young (ES76).
9. Breakdown Features of Various Microstrip-Type Gas Counter Designs and Their Improvements. *IEEE Transactions on Nucl. Sci.*, 45(3), 244–248, 1998. V. Peskov, B.D. Ramsey, and P. Fonte (ES84).

## Refereed Journal Articles (Continued)

10. Characterization of Semi-Insulating CdTe Crystals Grown by Horizontal Seeded Physical Vapor Transport. *J. Crys. Growth*, 191, 377–385, 1998. K. Chattopadhyay, S. Feth, H. Chen, A. Burger, and C.-H. Su (ES75).
11. Comparison of Continuous-Wave CO<sub>2</sub> Lidar Calibration by Use of Earth-Surface Targets in Laboratory and Airborne Measurements. *Appl. Opt.*, 37 (30), 7120–7127, October 20, 1998. M.A. Jarzembski and V. Srivastava (HR20).
12. Comparison of Dark Pixels Observed by VIS and UVI in Dayglow Images. *Geophys. Res. Lett.*, 25, 3063, 1998. G.K. Parks, M.J. Brittnacher, R. Elsen, M. McCarthy, J.M. O'Meara, G.A. Germany, and J.F. Spann, Jr. (ES83).
13. A Comparison of Wolf's Reconstructed Record of Annual Sunspot Number with Schwabe's Observed Record of 'Clusters of Spots' for the Interval of 1826–1868. *Solar Physics*, 182, 217–230, 1998. R.M. Wilson (ES82).
14. Convection in an Infinite Vertical Cylinder in the Presence of a Horizontal Magnetic Field. *Microgravity Sci. & Tech. Int. J.*, XI, 4, 210–217, 1998. N. Ramachandran and K. Mazuruk (ES76).
15. Convection of Plasmaspheric Plasma Into the Outer Magnetosphere and Boundary Layer Region: Initial Results. Global Observations and Models in the ISTP Era: *Geophysical Monograph*, 45–49, 1998. D. Ober, J.L. Horwitz, and D.L. Gallagher (ES83).
16. Cosmic-Ray Proton and Helium Spectra: Results From the JACEE Experiment. *Astrophys. J.*, 502, 278–283, July 20, 1998. M.J. Christl, K. Chebli, M.L. Cherry, T.H. Burnett, K. Asakimori, S. Dake, J.H. Derrickson, W.F. Fountain, J.C. Gregory, K.H. Moon, T.A. Parnell, F.E. Roberts, J.W. Watts, et al. (ES84).
17. Critical Analyses of Data Differences Between FNMOC and AFGWC Spawned SSM/I Datasets. *J. Atmos. Sci.*, 55(9), 1601–1612, May 1, 1998. A.A. Ritchie, M. Smith, H.M. Goodman, D. Conway, F. Lafontaine, B. Motta, and D. Moss (HR20).
18. The Current-Voltage Characteristics of a Large Probe in Low Earth Orbit: TSS–IR Results. *Geophys. Res. Lett.*, 25(4), 413, 1998. D.C. Thompson, C. Bonifazi, B.E. Gilchrist, S.D. Williams, W.J. Raitt, J.-P. Lebreton, W.J. Burke, N.H. Stone, and K.H. Wright, Jr. (ES83).
19. Current-Voltage Characteristics of the Tethered Satellite System Measurements and Uncertainties. *Geophys. Res. Lett.*, 25(4), 713, 1998. C.L. Chang, A.T. Drobot, K. Papadopoulos, K. Wright, N.H. Stone, C. Gurgiolo, D. Winningham, and C. Bonifazi (ES83).
20. Design and Flight Performance of the Cosmic Ray Detector BUGS-4. Submitted to *Nuc. Instr. & Methods in Phys. Res.*, 402, 104–122, 1998. A.E. Smith, J.J. Petruzzo III, J.C. Gregory, C. Thoburn, R.W. Austin, J.H. Derrickson, T.A. Parnell, M.R.W. Mashedier, and P.H. Fowler (ES84).



## Refereed Journal Articles (Continued)

21. Diffusive Gas Losses from Silica Glass Ampoules at Elevated Temperatures. *J. Cryst. Growth*, 191, 897, 1998. W. Palosz (ES75).
22. Direct Determination of the Metastable Liquid Miscibility Gap in Undercooled Cu-Co Alloys. *Materials Lett.*, 36, 152, 1998. D. Li, M.B. Robinson, T.J. Rathz, and G.A. Williams (ES75).
23. Discovery of the 198 x X-ray Pulsar GRO J2058+42. *Astrophys. J.*, 499 (2), 820–827, June 1, 1998. C.A. Wilson, M.H. Finger, B.A. Harmon, D. Chakrabarty, and T. Strohmayer (ES84).
24. The Effect of Protein Impurities on Lysozyme Crystal Growth. *Biotech. & Bioengineering*, 59, 776–785, 1998. R.A. Judge, E.L. Forsythe, and M.L. Pusey (ES76).
25. Electro-Optical Effects in Thin Organic Films. *J. Phys. D: Appl. Phys.*, 31, 2711–2717, 1998. A. Leyderman and B.G. Penn (ES76).
26. Enhanced Detection of *Vibrio Cholerae* in Oyster Homogenate Based on Centrifugal Removal of Inhibitory Agents. *J. Microbiological Methods*, 33, 237–244, 1998. D. Alexander, A. DePaola, and R.B. Young (ES76).
27. Enhanced Electrodynamic Tether Currents Due to Electron Emission from a Neutral Gas Discharge: Results from the TSS–IR Mission. *Geophys. Res. Lett.*, 25(4), p. 437, 1998. B.E. Gilchrist, C. Bonifazi, S.G. Bilen, W.J. Raitt, W.J. Burke, N.H. Stone, and J.-P. Lebreton (ES83).
28. Environmental Assessment and Monitoring with ICAMS (Image Characterization and Modeling System) Using Multiscale Remote-Sensing Data. *Applied Geographic Studies*, 2(2), 77–93, May 1998. N. Lam, H.-I. Qiu, D.A. Quattrochi, and W. Zhao (HR20).
29. An Estimate for the Size of Cycle 23 Based on Near Minimum Conditions. *J. Geophys. Res.*, 103 (A4), 6595–6603, April 1, 1998. R.M. Wilson, D.H. Hathaway, and E.J. Reichmann (ES84).
30. Estimating the Size and Timing of Maximum Amplitude for Cycle 23 From Its Early Cycle Behavior. *J. Geophys. Res. (Space Physics)*, 103 (A8), 17,411–17,418, August 1, 1998. R.M. Wilson, D.H. Hathaway, and E.J. Reichmann (ES82).
31. Evidence for Solar-Cycle Forcing and Secular Variation in the Armagh Observatory Temperature Record (1844–1992). *J. Geophys. Res.*, 103(D10), 11,159–11,171, May 27, 1998. R.M. Wilson (ES82).
32. Floating-Zone Growth of Silicon in Magnetic Fields: Part II: Strong Static Axial Fields. *J. Cryst. Growth*, 183, 554–563, 1998. A. Croell, F.R. Szofran, P. Dold, K.W. Benz, and S.L. Lehoczky (ES75).
33. Gamma-Ray Burst Overview. *Adv. Space Res.*, 22 (7), 1065–1075, 1998. C.A. Meegan (ES84).

## Refereed Journal Articles (Continued)

34. Generalized Kinetic Description of Steady-State Collisionless Plasmas. *J. Geophys. Res.*, 103 (A4), 6871–6889, April 1, 1998. G.V. Khazanov, M.W. Liemohn, and E.N. Krivorutsky (ES83).
35. Generic Signatures of the Time Profiles of Cosmic Gamma-Ray Bursts. *Astrophys. J.*, 504, 925–934, September 10, 1998. I.G. Mitrofanov, A.S. Pozanenko, M.S. Briggs, W.S. Paciesas, R.D. Preece, G.N. Pendleton, and C.A. Meegan (ES84).
36. The Geometric Spreading of Coronal Plumes and Coronal Holes. *Solar Physics*, 180, 231–246, 1998. S.T. Suess, G. Poletto, A.-H. Wang, S.-T. Wu, and I. Cuseri (ES82).
37. Global Lightning Total, Cloud and Ground Flash Estimates. *J. Geophys. Res.*, 103(D16), 19,791–19,809, August 27, 1998. D. Mackerras, M. Darveniza, R.E. Orville, E.R. Williams, and S.J. Goodman (HR20).
38. A Global Model of the Corona with Heat and Momentum Addition. *J. Geophys. Res.*, 103, 1913–1922, February 1, 1998. A.H. Wang, S.-T. Wu, S.T. Suess, and G. Poletto (ES82).
39. Global Validation of Single-Station Schumann Resonance Lightning Location. *J. Atmospheric and Solar Terrestrial Physics*, 60, 701–712, 1998. D. Boccippio, C. Wong, E. Williams, R. Boldi, H.J. Christian, and S.J. Goodman (HR20).
40. Heat Treatments of ZnSe Starting Materials for Physical Vapor Transport. *J. Cryst. Growth*, 192, 386–394, 1998. C.-H. Su, W. Palosz, S. Feth, and S.L. Lehoczky (ES75).
41. Identification of the Periodic Hard X-ray Transient GRO J1849-03 with the X-ray Pulsar GS 1843-02 = X1845-024—A New Be/X-ray Binary. *Astrophys. J.*, 494, L203–205, February 20, 1998. P. Soffitta, J.A. Tomsick, B.A. Harmon, E. Costa, E.C. Ford, M. Tavani, S.N. Zhang, and P. Kaaret (ES84).
42. Initial Response and Complex Polar Cap Structures of the Aurora in Response to the January 10, 1997 Magnetic Cloud. *Geophys. Res. Lett.*, 25(14), 2577–2580, July 15, 1998. J.F. Spann, Jr., G.A. Germany, G.K. Parks, R. Elsen, and M.J. Brittner (ES83).
43. Inner Magnetospheric Superthermal Electron Transport: Photoelectron and Plasma Sheet Electron Sources. *J. Geophys. Res.*, 103 (A10), 23,485–23,501, October 1, 1998. G.V. Khazanov, M.W. Liemohn, J.U. Kozyra, and T.E. Moore (ES83).
44. Intercomparison of Pulsed Lidar Data with Flight Level CW Lidar Data and Modeled Backscatter From Measure Aerosol Microphysics Near Japan and Hawaii. *J. Geophys. Res.*, 103 (D16), 19,649–19,661, August 27, 1998. D.R. Cutten, J.D. Spinhirne, R.T. Menzies, D.A. Bowdle, V. Srivastava, R.F. Pueschel, A.D. Clarke, and J. Rothermel (HR20).
45. Lattice Dynamics of Colloidal Crystals During Photopolymerization of Acrylic Monomer Matrix. *J. Mater. Sci.*, 33, 887–894, 1998. H.B. Sunkara, B.G. Penn, D.O. Frazier, and N. Ramachandran (ES76).

## Refereed Journal Articles (Continued)

46. Liquidus Temperatures and Solidification Behavior in the Copper-Niobium System. *Acta Materialia*, 46(11), 3849–3855, July 1998. D. Li, M.B. Robinson, T.J. Rathz, and G.A. Williams (ES75).
47. Locations of Bromide Ions in Tetragonal Lysozyme Crystals 1998. *Acta Cryst.*, D54, 899–904, 1998. K. Lim, A. Nadarajah, E.L. Forsythe, and M.L. Pusey (ES76).
48. Magnetospheric Radio Sounding on the IMAGE Mission. *Radio Sci. Bulletin*, No. 285, 9–20, 1998. R.F. Benson, B.W. Reinish, J.L. Green, J.-L. Bougeret, W. Calvert, D.L. Carpenter, S.F. Fung, D.L. Gallagher, M.M. Haines, R. Manning, P. Reiff, and W.W.L. Taylor (ES83).
49. Magnetotail Flow Bursts: Association to Global Magnetospheric Circulation, Relationship to Ionospheric Activity and Direct Evidence for Localization. *Geophys. Res. Lett.*, 24, 2271, 1998. V. Angelopoulos, T.D. Phan, D.E. Larson, F.S. Mozer, R.P. Lin, G.K. Parks, M.J. Brittnacher, G.A. Germany, and J.F. Spann, Jr. (ES83).
50. Measurement of Interfacial Undercooling in a Dilute Pb-Sn Alloy Near the Regime of Morphological Instability. *J. Crys. Growth*, 193, 692–700, 1998. S. Sen, B.K. Dhindaw, P.N. Peters, P.A. Curreri, and W.F. Kaukler (ES75).
51. Microgravity Experiments and Numerical Modeling of Rotating Buoyant Convection in a Spherical Shell with Latitudinal Thermal Gradients. *Microgravity Science and Technology International Journal for Microgravity Research and Applications*, XI(4), 197, 1998. T.L. Miller and F.W. Leslie (HR20).
52. Modeling of Metal-Ferroelectric-Semiconductor Field Effect Transistors. *Integrated Ferroelectrics*, 21, 127–143, 1998. T.C. MacLeod and F.D. Ho (ES93).
53. Molecular Static Third-Order Polarizabilities of Carbon-Cage Fullerenes and Their Correlation With Three Geometric Properties: Symmetry, Aromaticity, and Size. *J. Molecular Structure: THEOCHEM*, 454, 135–148, 1998. C.E. Moore, B.H. Cardelino, D.O. Frazier, J. Niles and X-Q. Wang (ES01).
54. The Multi-Center Airborne Coherent Atmospheric Wind Sensor, MACAWS. *Bull. Of Amer. Meteor. Soc.*, 79 (4), 581–599, April 1998. J. Rothermel, D.R. Cutten, R.M. Hardesty, R.T. Menzies, J.N. Howell, S.C. Johnson, D.M. Tratt, L.D. Olivier, and R.M. Banta (HR20).
55. Multi-Instrument Analysis of a Traveling Convection Vortex Event on July 24, 1996 Coordinated with the Polar UVI. *J. Geophys. Res.*, 103, 23,357–23,372, 1998. R.J. Sitar, C.R. Clauer, J.B. Baker, A.J. Ridley, J. Cumnock, G.A. Germany, J.F. Spann, Jr., M.J. Brittnacher, and G.K. Parks (ES83).
56. Multiyear BATSE Earth Occultation Monitoring of NGC 4151. *Astrophys. J.*, 501, 608 1998. A.M. Parsons, N. Gehrels, W.S. Paciesas, B.A. Harmon, G.J. Fishman, C.A. Wilson, and S.N. Zhang (ES84).

## Refereed Journal Articles (Continued)

57. A Multi-Year Light Curve of Scorpius X-1 Based on CGRO BATSE Spectroscopy Detector Observations. *Astrophys. J. Supplements*, 116, 287, 1998. B.J. McNamara, T.E. Harrison, P.A. Mason, M. Templeton, C.W. Heikkila, T. Buckley, E. Galvan, A. Silva, and B.A. Harmon (ES84).
58. Network Coronal Bright Points: Coronal Heating Concentrations Found in the Solar Magnetic Network. *Astrophys. J.*, 501, 386–396, July 1, 1998. D.A. Falconer, R.L. Moore, J.G. Porter, and D.H. Hathaway (ES82).
59. Neutron Induced Backgrounds in the MIXE X-ray Detector at Balloon Altitudes. Proceedings of the IEEE Conference on High Energy Radiation Backgrounds in Space, CHERBS 97, 82–85, 1998. T.W. Armstrong, B.L. Colborn, K.L. Dietz, and B.D. Ramsey (ES84).
60. A New Auroral Feature: The Nightside Gap. *Geophys. Res. Lett.*, 25, 3747, 1998. D. Chua, M.J. Brittnacher, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).
61. Observations of Reflected Ions and Plasma Turbulence for Satellite Potentials, Greater Than the Ion Ram Energy. *Geophys. Res. Lett.*, 25(4), p. 417–420, February 15, 1998. K.H. Wright, Jr., N.H. Stone, J. Sorensen, J.D. Winningham, and C. Gurgiolo (ES83/UAH).
62. On Analysis of Dual Spacecraft Stereoscopic Observations to Determine the Three-Dimensional Morphology and Plasma Properties of Solar Coronal Flux Tubes. *Solar Physics*, 183(1), 45–76, November 1998. G.A. Gary, J.M. Davis, and R.L. Moore (ES82).
63. On the Association of Gamma-Ray Bursts with Supernovae. *Astrophys. J.*, 506, L27–L30, October 10, 1998. R.M. Kippen, M.S. Briggs, J.M. Kommers, C. Kouveliotou, K. Hurley, C.R. Robinson, J. van Paradijs, D.H. Harman, T.J. Galama, and P.M. Vreeswijk (ES84).
64. On the Role of “Hot Towers” in Tropical Cyclone Formation. *Meteorology and Atmos. Phys.*, 67, 15–35, 1998. J. Simpson, J.B. Halverson, B.S. Ferrier, W.A. Petersen, R.H. Simpson, R. Blakeslee, and S.L. Durden (HR20).
65. Particle Engulfment and Pushing by Solidification Interfaces Part I: Ground Experiments. *Metallurgical & Materials Transactions*, 29A, 1691–1696, June 1998. F.R. Juretzko, B.K. Dhindaw, D.M. Stefanescu, S. Sen, and P.A. Curreri (ES75).
66. Particle Engulfment and Pushing by Solidification Interfaces Part II: Microgravity Experiments and Theoretical Analysis: *Metallurgical and Materials Transactions*, 29A, 1697–1706, June 1998. D.M. Stefanescu, F.R. Juretzko, B.K. Dhindaw, A. Catalina, S. Sen, and P.A. Curreri (ES75).
67. POLAR Observations of Properties of  $H^+$  and  $O^+$  Conics in the Cusp Near ~5300 km Altitude. In Geospace Mass and Energy Flow (eds. J.L. Horwitz, D.L. Gallagher, and W.K. Peterson), *AGU Monograph 104*, 107, 1998. M. Hirahara, J.L. Horwitz, T.E. Moore, M.O. Chandler, B.L. Giles, P.D. Craven, and C.L. Pollock (ES83).

## Refereed Journal Articles (Continued)

68. Polar Wind Survey with TIDE/PSI Suite Aboard POLAR. *J. Geophys. Res.—Space Physics*, 103(A12), 29,305–29,337, 1998. Y.-J. Su, J.L. Horwitz, T.E. Moore, M.O. Chandler, P.D. Craven, B.L. Giles, M. Hirahara, and C.J. Pollock (ES83).
69. Protein Crystal Movements and Fluid Flows During Microgravity Growth. *Phil. Trans. R. Soc. Land. A*, 356(1739), 1045–1061, 1998. T.J. Boggon, N.E. Chayen, E.H. Snell, J. Dong, P. Lautenschlager, L. Potthast, D.P. Siddons, V. Stojanoff, E. Gordon, and A.W. Thompson (ES76).
70. Pulse Delay Observations of GROJ1744-28. *Astrophys. J. Lett*, 496, L101–L104, April 1, 1998. T.M. Koshut, C. Kouveliotou, J. van Paradijs, P.M. Woods, G.J. Fishman, M.S. Briggs, W.H.G. Lewin, and J.M. Kommers (ES81).
71. The Radio-To-X-ray Spectrum of GRB 970508 on 1997 May 21.0 UT. *Astrophys. J.*, 500, L97–L100, June 20, 1998. T. Galama, R.A. Wijers, M. Bremer, P.J. Groot, R.G. Strom, C. Kouveliotou, and J. van Paradijs (ES84).
72. The Rapid Decay of the Optical Emission From GRB980326 and Its Possible Implications. *Astrophys. J. Lett.*, 502, L123, 1998. P.J. Groot, T. Galama, J. van Paradijs, C. Kouveliotou, M.S. Briggs, C. Robinson, et al. (ES84).
73. Rate and Gain Limitations of MSGC's and MGC's Combined with GEM and Other Preamplification Structures. *Nucl. Instr. & Meth. In Phys. Res.*, A419, 405–409, 1998. P. Fonte, V. Peskov, and B.D. Ramsey (ES84).
74. Relationship of Topside Ionospheric Ion Outflows to Auroral Forms and Precipitation, Plasma Waves, and Convection Observed by POLAR. *J. Geophys. Res.—Atmos.*, 103 (A8), 17,391–17,410, August 1, 1998. M. Hirahara, J. L. Horwitz, T.E. Moore, G.A. Germany, J.F. Spann, Jr., W.K. Peterson, E.G. Shelley, M.O. Chandler, B.L. Giles, P.D. Craven, C.J. Pollock, D.A. Gurnett, J.S. Pickett, A.M. Persoon, J.D. Scudder, N.C. Maynard, F.S. Mozer, M.J. Brittnacher, and T. Nagai (ES83).
75. Remote Sensing of Multi-Level Wind Fields with High-Energy Airborne Scanning Coherent Doppler Lidar. *Optics Express*, 2 (2), 40–50, January 19, 1998. J. Rothermel, L.D. Olivier, R.M. Banta, R.M. Hardesty, J. N. Howell, D.R. Cutten, S.C. Johnson, R.T. Menzies, and D.M. Tratt (HR20).
76. Remotely-Sensed Regional-Scale Evapotranspiration of a Semi-Arid Great Basin Desert and its Relationship to Geomorphology, Soils, and Vegetation. *Geomorphology*, 21, 329–349, January 1998. C. Laymon, D.A. Quattrochi, E. Malek, L. Hips, J. Boettinger, G. McCurdy (HR20).
77. Results of WetNet PIP-2 Project. *J. Atmos. Sci.*, 55, 1483–1536, May 1, 1998. E.A. Smith, J.E. Lamm, R. Adler, J. Alishouse, K. Aonashi, E. Barrett, P. Bauer, W. Berg, A. Chang, R. Ferraro, J. Ferriday, S.J. Goodman, N. Grody, C. Kidd, D. Kniveton, C. Kummerow, G. Liu, F. Marzano, A. Mugnai, W. Olson, G. Petty, A. Shibata, R. Spencer, F. Wentz, T. Wilheit, and E. Zipser (HR20).

## Refereed Journal Articles (Continued)

78. Retrieval of Geophysical Parameters from GOES: Evaluation of a Split Window Technique. *J. Appl. Meteor.* 37, 1205–1227, 1998. R.J. Suggs, G.J. Jedlovec, and A.R. Guillory (HR20).
79. The Role of the Space Shuttle Videotapes in the Discovery of Sprites, Jets and Elves. *J. Atmos. and Terrestrial Phys.*, 60, 669–677, 1998. W.L. Boeck, O.H. Vaughan, R.J. Blakeslee, B. Vonnegut, and M. Brook (HR20).
80. RXTE Observations of Cygnus X–3. *New Astronomy*, 42, 629, 1998. M.L. McCollough, C. Robinson, S.N. Zhang, B.A. Harmon, W.S. Paciesas, S. Dieters, R.M. Hjellming, M. Rupen, A.J. Mioduszewski, E.B. Waltman, F.D. Ghigo, G.G. Pooley, R.P. Fender, and W. Cui (ES84).
81. The Scanning Thermal Ion Composition Spectrometer (STICS). *AGU Monograph Series, Measurement Techniques in Space Plasmas: Particles*, edited by R.F. Pfaff, J.E. Borovsky, and D.T. Young, 102, 175–180, 1998. V.N. Coffey, T.E. Moore, and C.J. Pollock (ES83).
82. Segregation Coefficients of Impurities in Selenium by Zone Refining. *J. Crys. Growth*, 187, 569–572, 1998. C.-H. Su and Y.-G. Sha (ES75).
83. Simulating AXAF Grating Spectra of Accreting White Dwarfs. *Publications of Astronomical Society of Australia*, 15, 339, 1998. A.F. Tennant, K. Wu, S.L. O’Dell, and M.C. Weisskopf (ES84).
84. The Solar Wind—Inner Heliosphere. *Space Science Reviews*, 83, 75–86, 1998. S.T. Suess, J.L. Phillips, D.J. McComas, B.E. Goldstein, M. Neugebauer, and S. Nerney (ES82).
85. Spacecraft Potential Control by PSI on the Polar Spacecraft. *J. of Spacecr. & Rockets*, 35(6), 845–849, 1998. R.H. Comfort, T.E. Moore, P.D. Craven, C.J. Pollock, F.S. Mozer, and W.T. Williamson (ES83).
86. SSMI Rain Retrievals Within a Unified All-Weather Ocean Algorithm. *J. Atmos. Sci.*, 55, 1613–1627, May 1, 1998. F.J. Wentz and R.W. Spencer (HR20).
87. Static Test for a Gravitational Force Coupled to Type II YBCO Superconductors. *Physica C: Superconductivity*, 281, 260–267, 1998. D.A. Noever, N. Li, T. Robertson, R. Koczor, and W. Brantley (ES76).
88. Stationary Crystal Diffraction with a Monochromatic Convergent X-ray Source and Application for Macromolecular Crystal Data Collection. *Acta Cryst.*, D54, 200–214, 1998. J.X. Ho, E.H. Snell, R.C. Sisk, J.R. Ruble, D.C. Carter, S.M. Owens, and W.M. Gibson (ES76/NRC).
89. A Study of Breakdown Limits in Microstrip Gas Counters with Preamplification Structures. *Nucl. Instr. And Methods for Phys. Res. A.*, 416, 23–31, 1998. P. Fonte, V. Peskov, and B.D. Ramsey (ES84).

## Refereed Journal Articles (Continued)

90. Suprathermal Electrons Observed on the TSS–IR Satellite. *Geophys. Res. Lett.*, 25(4), 429, 1998. J.D. Winningham, N.H. Stone, C.A. Gurgiolo, K.H. Wright, R.A. Frahm, and C.A. Bonifazi (ES83).
91. The Synchrotron Shock Model Confronts a “Line of Death” in the BATSE Gamma-Ray Burst Data. *Astrophys. J.*, 506, L23–L26, October 10, 1998. R.D. Preece, M.S. Briggs, G.N. Pendleton, W.S. Paciesas, and D.L. Band (ES84).
92. Thermal Electron Capped Hemisphere Spectrometer. *AGU Monograph, Measurement Techniques in Space Plasmas: Particles*, edited by R.F. Pfaff, J.E. Borovsky, and D.T. Young, 102, 201–207, 1998. C.J. Pollock, T.E. Moore, V.N. Coffey, M.L. Adrian, and N. Martinez (ES83).
93. Tropical Oceanic Precipitation Changes After the 1991 Pinatubo Eruption. *J. Atmos. Sciences*, 1707–1713, May 1, 1998. R.W. Spencer, F.J. LaFontaine, T. DeFelice, and F.J. Wentz (HR20).
94. The TSS–IR Mission: Overview and Scientific Context. *Geophys. Res. Lett.*, 25(4), 409–412, February 15, 1998. N.H. Stone and C. Bonifazi (ES83).
95. Under What Conditions Will Ionospheric Molecular Ion Outflow Occur? In *Geospace Mass and Energy Flow, AGU Monograph*, edited by J.L. Horwitz, D.L. Gallagher, and W.K. Peterson, 104, 85–95, 1998. G.R. Wilson and P.D. Craven (ES83).
96. An Unusual Supernova in the Error Box of the Gamma-Ray Burst of 25 April, 1998. *Nature*, 395, 670–672, 1998. T.J. Galama, P.M. Vreeswijk, J. van Paradijs, C. Kouveliotou, T. Augasteijn, H. Bohnhardt, J.P. Brewer, V. Doublier, J.F. Gonzalez, B. Leibundgut, et al. (ES84).
97. Using Strong Solar Coronal Emission Lines as Coronal Flux Proxies. *Solar Physics*, 180, 179–191, June 1998. D.A. Falconer, S.D. Jordan, J.W. Brosius, J.M. Davila, R.J. Thomas, V. Andreatta, and H. Hara (ES82).
98. Validating Prehistoric and Current Social Phenomena Upon the Landscape, Peten, Guatemala. Special Publication of the National Academy of Sciences/National Research Council on “People and Pixels: Linking Remote Sensing and Social Science,” *National Academy Press*, 145–163, May 1998. T.L. Sever (HR20).
99. Vapor Phase Stoichiometry and Heat Treatment of CdTe Starting Material for Physical Vapor Transport. *J. Crys. Growth*, 183, 519–524, February 1998. C.-H. Su, Y.-G. Sha, S.L. Lehoczky, H.-C. Liu, R. Fang, and R.F. Brebrick (ES75).
100. An X-ray Pulsar With a Superstrong Magnetic Field in the Soft Gamma Repeater SGR 1806–20. *Nature*, 393, 235, May 21, 1998. C. Kouveliotou, G.J. Fishman, S. Dieters, T. Strohmayer, C.A. Meegan, J. van Paradijs, K. Hurley, J. Kommers, I. Smith, D. Frail, and T. Murakamitt (ES84).

## Contribution to Books, Conference Proceedings, Etc.

1. Advanced X-ray Astrophysics Facility (AXAF): Calibration Overview. *Proceedings of the 1998 SPIE International Symposium*, San Diego, CA, July 19–25, 1998. SPIE, Vol. 3444, pp. 2–18, 1998. S.L. O'Dell and M.C. Weisskopf (ES84).
2. Auroral Observations from the POLAR Ultraviolet Imager (UVI). *AGU Monograph—Encounter Between Global Observations and Models in the ISTP Era*, Vol. 104, pp. 149–160, 1998. G.A. Germany, J.F. Spann, Jr., G.K. Parks, M.J. Brittnacher, R. Elsen, L. Chen, et al. (ES83).
3. AXAF-Mirror Effective Area Calibration Using the C-Continuum Source and Solid-State Detectors. *Proceedings of the 1998 SPIE International Symposium*, San Diego, CA, July 19–25, 1998, SPIE, Vol. 3444, pp. 234–257, 1998. P. Zhao, R.A. Austin, R.J. Edgar, R.F. Elsner, T.J. Gaetz, D.E. Graessle, D. Jerius, J.J. Kolodziejczak, W.C. McDermott, S.L. O'Dell, M.E. Sulkanen, D.A. Schwartz, D.A. Swartz, A.F. Tennant, L.P. Van Speybroeck, B.J. Wargellin, M.C. Weisskopf, and C.G. Zirnstein (ES84).
4. Calibration Results for the AXAF Flight Contamination Monitor. *Proceedings of the 1998 SPIE International Symposium*, San Diego, CA, July 19–25, 1998, SPIE, Vol. 3444, pp. 177–188, 1998. R.F. Elsner, S.L. O'Dell, B.D. Ramsey, A.F. Tennant, M.C. Weisskopf, J.J. Kolodziejczak, D.A. Swartz, D.E. Engelhaupt, G.P. Garmire, J.A. Nousek, and M.W. Bautz (ES84).
5. Cloud Filtering Using a Bi-Spectral Spatial Coherence Approach. *Proceedings of the Ninth Conference on Satellite Meteorology and Oceanography*, Amer. Meteor. Soc., Paris, France, May 25–29, 1998. P.3.17A, 1–3, 1998. A.R. Guillory, J.M. Lecue, G.J. Jedlovec, and B.N. Whitworth (HR20).
6. Dielectric Spectroscopy Study of ZnSe Grown by Physical Vapor Transport. *Proceedings of the MRS 1997 Fall Meeting*, Boston, MA, Dec. 1–5, 1997, Vol. 487, p. 517, 1998. J. L. Kokan, R. Gerhardt, and C.-H. Su (ES75).
7. Effect of Inclusions on Plane Strain Behavior of Sand. *Proceedings of the 12th ASCE Engineering Mechanics Conference*, La Jolla, CA, May 17, 1998, pp. 1291–1294, 1998. K.A. Alshibli, S. Sture, and N.C. Costes (ES71).
8. Effective Area of the AXAF High Resolution Camera (HRC). *Proceedings of the 1998 SPIE Conference*, San Diego, CA, July 19–22, 1998. SPIE, Vol. 3444, pp. 93–105, 1998. D. Patnaude, D. Pease, H. Donnelly, M. Juda, C. Jones, S.S. Murray, M. Zombeck, R. Kraft, A. Kenter, G. Meehan, D.A. Swartz, and R.F. Elsner (ES84).
9. Energy Characterization of a Dynamic Auroral Event Using GGS UVI Images. *AGU Monograph—Encounter Between Global Observations and Models in the ISTP Era*, Vol. 104, pp. 143–148, 1998. G.A. Germany, G.K. Parks, M.J. Brittnacher, J.F. Spann, Jr., J. Cumnock, D. Lummerzheim, F. Rich, and P.G. Richards (ES83).



## Contribution to Books, Conference Proceedings, Etc. (Continued)

10. Further Evidence of Microfossils in Carbonaceous Meteorites. SPIE's International Symposium, San Diego, CA, July 19–24, 1998 in *Instruments, Methods, and Missions for Astrobiology*, edited by R.B. Hoover, SPIE, Vol. 3441, pp. 203–215, 1998. R.B. Hoover, A.Y. Rozanov, S.I. Zhmur, and V.M. Gorlenko (ES82).
11. GRB 971208. IAU Circular No. 6785, 1998. V. Connaughton, R.M. Kippen, and R. Preece (ES84).
12. GRB 971214. IAU Circular No. 6789, 1998. R.M. Kippen, P. Woods, V. Connaughton, K. Hurley, D.A. Smith, and R. Remillard (ES84).
13. GRB 980326 and GRB 980329. IAU Circular No. 6856, 1998. M.S. Briggs, G.A. Richardson, R.M. Kippen, and P. Woods (ES84).
14. Instrumentation for X-ray Astronomy from High-Altitude Balloons: Recent Developments and Future Plans. *Proceedings of New Detectors Workshop*, Erice, Italy, November 1–7, 1997, to be published in World Scientific 1998. B.D. Ramsey, V. Peskov, P. Fonte, and E. Podoliak (ES84).
15. Intercomparison of Total Precipitable Water From Satellite and Other Long Term Data Sets. *Proceedings of the Ninth Conference on Satellite Meteorology and Oceanography*, Paris, France, May 25–29, 1998, pp. 26–29, 1998. F.-C. Chang, G.J. Jedlovec, R.J. Suggs, and A.R. Guillory (HR20).
16. The Magnetic Roots of Enhanced Coronal Heating in Large Loops and Plumes. Solar Jets and Coronal Plumes, *ESA SP-421*, edited by T.-D. Guyenne, ESA Publ. Div., ESTEC: Noordwijk, pp. 147–155, 1998. J.G. Porter, D.A. Falconer, and R.L. Moore (ES82).
17. The Many Faces of the Sun, Chapter 3. *Active Regions*, edited by K.T. Strong, J. Saba, B. Haisch, J.T. Schmelz, pp. 41–87, 1998. G.D. Holman, C.-C. Cheng, J.B. Gurman, B.M. Haisch, A.I. Poland, J.G. Porter, J.L.R. Saba, B. Schmieder, and K.T. Strong (ES82).
18. The Marshall Automated Wind Algorithm for Geostationary Satellite Wind Applications. *Proceedings of the Ninth Conference on Satellite Meteorology and Oceanography*, Paris, France, May 25–29, 1998, pp. 349–352, 1998. G.J. Jedlovec and R.J. Atkinson (HR20).
19. Microgravity Processing and Photonic Applications of Organic and Polymeric Materials. *Photonic Polymer Systems*, Chapter 17, edited by Wise/Wnek/Trantolo/Cooper/Gresser, pp. 693–735, 1998. D.O. Frazier, B.G. Penn, D.D. Smith, W.K. Witherow, M.S. Paley, and H.A. Abdeldayem (ES01).
20. NASA University Research Centers Technical Advances in Aeronautics, Space Sciences and Technology, Earth Systems Sciences, Global Hydrology, and Education, Vol. II. *Proceedings of the NASA URC Technical Conference (URC TC '98)*, Huntsville, AL, February 22–25, 1998. T.L. Coleman, B. White, and S.J. Goodman, ed. (ISBN 1-889335-06-1) (HR20).

## Contribution to Books, Conference Proceedings, Etc. (Continued)

21. A Novel Method of Gradient Forming and Fluid Manipulation in Reduced Gravity Environments. *AIAA Paper 98-0733 (A98-16557)*, AIAA, Aerospace Sciences Meeting and Exhibit, Reno, NV, January 12–15, 1998. N. Ramachandran, F.W. Leslie, P. Peters, and R.C. Sisk (ES71).
22. Observed Changes in Upper-Tropospheric Water Vapor Transport from Satellite Measurements During the Summers of 1987 and 1988. Preprints of Ninth Symposium on Global Change Studies, Phoenix, AZ, pp. 23–26, January 11–16, 1998. J.A. Lerner, G.J. Jedlovec, and R.J. Atkinson (HR20).
23. Phosphate Biomineralization of Cambrian Microorganisms. SPIE's International Symposium, San Diego, CA, July 19–24, 1998, in *Instruments, Methods, and Missions for Astrobiology*, edited by R.B. Hoover, SPIE, Vol. 3441, pp. 170–176, 1998. D.S. McKay, A.Y. Rozanov, R.B. Hoover, and F. Westall (ES82).
24. Photonic and Opto-Electronic Applications of Polydiacetylene Films Photodeposited from Solution and Polydiacetylene Copolymer Networks. *Proceedings of 1998 SPIE International Symposium*, Orlando, FL, April 16, 1998, SPIE, Vol. 3388, 259–266, April 1998. D.O. Frazier, D.D. Smith, W.K. Witherow, M.S. Paley, H.A. Abdeldayem, and D.B. Wolfe (ES01).
25. Photovoltaics Using In Situ Resource Utilization for HEDS. Space '98, *Proceedings of the American Society of Civil Engineers Conference*, Albuquerque, NM, April 26–30, 1998. D. R. Criswell, and P.A. Curreri (ES75).
26. Preliminary Results from a Laboratory Study of the Charging Mechanisms of Particles in a Dusty Plasma. *Proceedings of the Seventh Workshop on the Physics of Dusty Plasmas Conference*, CP446, pp. 73–80, 1998. C.C. Venturini, J.F. Spann, Jr., and R.H. Comfort (ES83).
27. Processing Glass Fiber from Moon/Mars Resources. *Space '98 Proceedings of American Society of Civil Engineers Conference*, Albuquerque, NM, April 26–30, 1998, pp. 290–300, 1998. D.S. Tucker and E.C. Ethridge (ES75).
28. Quality Evaluation of Macromolecular Crystals Using X-ray Mosaicity Measurements. *Proceedings of the Spacebound 1997 Conference*, Canadian Space Agency, pp. 306–319, 1998. E.H. Snell (ES76).
29. Remote Sensing Measurement of Vertical and Horizontal Moisture Variations from Aircraft Instruments. *Proceedings of 10th Symposium on Meteorological Observations and Instrumentation*, Phoenix, AZ, January 11–16, 1998, Amer. Meteor. Soc., pp. 125–130, 1998. R.J. Atkinson, A.R. Guillory, and G.J. Jedlovec (HR20).
30. Report on New Mission Concept Study: Stereo X-ray Corona Imager Mission. *Proceedings of the 1998 SPIE Conference*, SPIE, Vol. 3342, 53, 1998, San Diego, CA, July 19–22, 1998. P.C. Liewer, J.M. Davis, E.M. De Jong, G.A. Gary, J.A. Klimchuk, and R.P. Reinert (ES82).

### Contribution to Books, Conference Proceedings, Etc. (Continued)

31. The Role of Marangoni Convection for the FZ-Growth of Silicon. *Proceedings of the 49th International Astronautical Congress*, Melbourne, Australia, September 28–October 2, 1998, IAF–98–J.3.03, 1–11, 1998. P. Dold, A. Croll, M. Schweizer, Th. Kaiser, K.W. Benz, F.R. Szofran, S. Nakamura, and T. Hibiya (ES75).
32. SGR 1621–47. IAU Circular No. 6962, 1998. S. Dieters, P. Woods, C. Kouveliotou, and J. van Paradijs (ES84).
33. SGR 1627–41. IAU Circular No. 6944, 1998. C. Kouveliotou, R.M. Kippen, P. Woods, G. Richardson, V. Connaughton, and M.L. McCollough (ES84).
34. SGR 1627–41. IAU Circular No. 6944., 1998. C. Kouveliotou, R.M. Kippen, P. Woods, G.A. Richardson, V. Connaughton, and M.L. McCollough (ES84).
35. SGR 1900+14 AND PSR J1907+09. IAU Circular No. 7023, 1998. K. Xilouris, C. Kouveliotou, D.R. Lorimer, R. Ramachandran, and J. van Paradijs (ES84).
36. SGR 1900+14. IAU Circular No. 6929, 1998. C. Kouveliotou, P. Woods, R.M. Kippen, M.S. Briggs, and K. Hurley (ES84).
37. SGR 1900+14. IAU Circular No. 7001, 1998. C. Kouveliotou, T. Strohmayer, K. Hurley, J. van Paradijs, and P. Woods (ES84).
38. SGR 1900+14. IAU Circular No. 7003 (a), 1998. C. Kouveliotou, T. Strohmayer, T. Takeshima, J.H. Swank, and P. Woods (ES84).
39. SGR 1900+14. IAU Circular No. 7003 (b), 1998. C. Kouveliotou, G.J. Fishman, P. Woods, and R.M. Kippen (ES84).
40. The Space Readiness Coherent Lidar Experiment (SPARCLE) Space Shuttle Mission. *Proceedings of the Laser Radar Technology and Applications II – I SPIE Conference*, Orlando, FL, April 13–17, 1998, SPIE, Vol. 3380, 2–11, 1998. M.J. Kavaya and G.D. Emmitt (HR20).
41. Synoptic Datasets and Solar Activity Predictions. *Proceedings of the 18th NSO/Sacramento Peak Summer Workshop*, Synoptic Solar Physics, Sunspot, NM, September 9–12, 1997, edited by K.S. Balasubramaniam, J.W. Harvey, and D.M. Rabin, Astron. Soc. Pacific Conference Series, Vol. 140, pp. 47–55, 1998. D.H. Hathaway (ES82).
42. Use of Monochromators During AXAF Calibration. *Proceedings of the 1998 SPIE International Symposium*, San Diego, CA, July 19–25, 1998, SPIE, Vol. 3444, 189–197, 1998. D.A. Swartz, R.F. Elsner, J.J. Kolodziejczak, S.L. O'Dell, A.F. Tennant, M.E. Sulkanen, M.C. Weisskopf, and R.J. Edgar (ES84).

### Contribution to Books, Conference Proceedings, Etc. (Continued)

43. The Use of a Satellite Climatological Data Set to Infer Large-Scale Three-Dimensional Flow Characteristics. *Proceedings of the Ninth Conference on Satellite Meteorology and Oceanography*, Paris, France, May 25–29, 1998, pp. 30–33, 1998. J.A. Lerner, G.J. Jedlovec, and R.J. Atkinson (HR20).
44. Variations in Atmospheric Water Vapor as Seen in Satellite Data and Model Reanalysis Fields. *Proceedings of the Ninth Symposium on Global Change Studies Symposium on the Status and Prospects for Climate Prediction*, Phoenix, AZ, January 11–16, 1998, pp. 31–35. G.J. Jedlovec, F.-C. Chang, R.J. Suggs, and A.R. Guillory (HR20).
45. XTE J0111.2–7317. IAU Circular No. 7048, 1998. C.A. Wilson and M.H. Finger (ES84).
46. XTE J0421+560 and CI Camelopardalis. IAU Circular No. 6874, 1998. B.A. Harmon, G.J. Fishman, and W.S. Paciesas (ES84).
47. XTE J0421+560. IAU Circular No. 6856, 1998. W.S. Paciesas and G.J. Fishman (ES84).
48. XTE J1550–564. IAU Circular No. 7010, 1998. C.A. Wilson, B.A. Harmon, W.S. Paciesas, and M.L. McCollough (ES84).
49. XTE J1550–564. IAU Circular No. 7010, 1998. M.H. Finger, S. Dieters, and R.B. Wilson (ES84).
50. XTE J1748–288. IAU Circular No. 6933, 1998. B.A. Harmon, M.L. McCollough, C.A. Wilson-Hodge, S.N. Zhang, and W.S. Paciesas (ES84).
51. XTE J1946+274=GRO J1944+26. IAU Circular No. 7014, 1998. C.A. Wilson, M.H. Finger, R.B. Wilson, and D.M. Scott (ES84).

## Published Abstracts

1. Auroral Boundaries: Comparison Between UV Images, In Situ Precipitation, and Groundbased Optical Observations. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F750, 1998. G.A. Germany, W.R. Swift, F. Creutzberg, R. Eastes, F. Rich, J.F. Spann, Jr., M. Brittnacher, and G.K. Parks (ES83).
2. Can Kelvin-Helmholtz Instabilities of Jet-Like Structures and Plumes Cause Solar Wind Fluctuations at 1 AU? 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 274, 1998. S. Parhi, S.T. Suess, and M.E. Sulkanen (ES82).
3. Coincident UVI and WIND Observations of Pseudo-Breakups. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F784, 1998. M.O. Fillingim, M.J. Brittnacher, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).
4. Comparison of Energy Deposition in the Auroral Oval and Cap Regions for Cases Where Transpolar Structures Exist. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 313 1998. J.F. Spann, Jr., G.A. Germany, G.K. Parks, and M.J. Brittnacher (ES83).
5. COMPTel/BATSE High Energy Solar Flare Data on the Internet. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 253, 1998. N.B. Arndt, C.A. Young, J.M. Ryan, G. Rank, A. Connors, M. McConnell, R. Suleiman, D. Biesecker, R.A. Schwartz, G.J. Fishman, V. Schoenfelder, and M. Varendorff (ES81).
6. Density Dependence of Plasmaspheric Alfvén Eigenfrequencies in the Global Core Plasma Model. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 317, 1998. R.E. Denton, D.L. Gallagher, and P.D. Craven (ES83).
7. Dominance of Neutral-Line Magnetic Shear over Global Nonpotentiality for Strong Coronal Heating in Solar Active Regions. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 265, 1998. D. Falconer, G.A. Gary, R.L. Moore, and J.G. Porter (ES82).
8. Dynamics of the Polar Cap Boundary During Substorms as Determined by Auroral Images from Space. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 305, 1998. M. Brittnacher, G.K. Parks, and J.F. Spann, Jr. (ES83).
9. Effects of Convection Electric Fields on Modeled Plasmaspheric Densities and Temperatures. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F776, 1998. R.H. Comfort, P.G. Richards, J.-H. Liao, and P.D. Craven (ES83).
10. Effects of Solar Wind Pressure Pulses on Auroral Activity. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 306, 1998. R. Winglee, M. Brittnacher, G. Park, R. Elsen, G.A. Germany, and J.F. Spann, Jr. (ES83).

## Published Abstracts (Continued)

11. Evidence that the X-ray Plasma in Microflares is in a Sequence of Subresolution Magnetic Tubes. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 279, 1998. R.L. Moore, D.A. Falconer, and J.G. Porter (ES82).
12. Experimental Determination of Infrared Extinction Coefficients of Interplanetary Dust Particles. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 292, 1998. J.F. Spann, Jr. and M.M. Abbas (ES83).
13. Global Superthermal Electron Transport in the Inner Magnetosphere. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 288, 1998. G.V. Khazanov and M.W. Liemohn (ES83/NRC).
14. Investigation of Magneto-Optical Effects (An). 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 265, 1998. M.L. Adams, M.J. Hagyard, and E.A. West (ES82).
15. Laboratory Study of Micron-Size Particles in a Dusty Plasma (A). 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 293, 1998. C.C. Venturini, J.F. Spann, Jr., and R.H. Comfort (ES83).
16. Low-Energy Electron Effects on the Polar Wind Observed by the POLAR Spacecraft. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998, *Eos*, 79(45), F770, 1998; J.L. Horwitz, Y.-J. Su, E.E. Dors, T.E. Moore, B.L. Giles, M.O. Chandler, P.D. Craven, S.-W. Chang, and J. Scudder (ES83).
17. Multi-Instrument, Multi-Spacecraft Analysis of the June 20, 1996 Cusp Crossing by the Polar Spacecraft During Northward IMF Conditions. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 311, 1998. J.U. Kozyra, P. Song, M.O. Chandler, T.E. Moore, M.P. Wuest, C.T. Russell, and R.R. Anderson (ES83).
18. Multi-Spacecraft Observations in the Polar Cusp. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 307, 1998. J.S. Pickett, D.A. Gurnett, J.D. Menietti, L.A. Frank, J.D. Scudder, J.B. Sigwarth, K.L. Ackerson, B.T. Tsurutani, C.M. Ho, J. Chen, T.A. Fritz, C.T. Russell, Y. Kasahara, S. Watanabe, H. Fukunishi, W.K. Peterson, R.F. Pfaff, S. Kokubun, I. Kimura, T. Mukai, and M.O. Chandler (ES83).
19. Neutralization of Photoelectric Charging to Enable Core Plasma Measurements. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79 (17), 233, 1998. T.E. Moore, P.D. Craven, N. Singh, R.H. Comfort, and D. Thompson (ES83).
20. Nightside Auroral Gap: Implications for Magnetosphere-Ionosphere Coupling in the Midnight Auroral Zone (The). 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos* 79(45), F761, 1998. D. Chua, M.J. Brittnacher, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).

## Published Abstracts (Continued)

21. Nonlinear Kinetic Modeling of Plasmaspheric Refilling. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F768, 1998. M.W. Liemohn, G.V. Khazanov, J.U. Kozyra, and P.D. Craven (ES83).
22. Observations of the Plasmasphere With POLAR/TIDE, POLAR/TIMAS and LANL/MPS Instruments. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 306, 1998. P.D. Craven, T.E. Moore, M.F. Thomsen, J.E. Borovsky, W.K. Peterson, and R.H. Comfort (ES83).
23. Observations of the Plasmasphere with POLAR/TIDE, POLAR/TIMAS, and LANL/MPA Instruments. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 306 1998. P.D. Craven, T.E. Moore, M.F. Thomsen, J.E. Borovsky, W.K. Peterson, and R.H. Comfort (ES83).
24. On the Predictability of Substorms Following Sharp Northward Turnings of the IMF. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F778, 1998. G.T. Blanchard, L.R. Lyons, and J.F. Spann, Jr. (ES83).
25. On the Total Energy Deposition Between Periodically Occurring Activations of the Aurora. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*; 79(45), F784, 1998. J.F. Spann, Jr., G.A. Germany, G.K. Parks, M.J. Brittner, and R.W. Winglee (ES83).
26. Paradox of Filamented Coronal Hole Flow but Uniform High Speed Wind (The). 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 271, 1998. S.T. Suess, S. Parhi, and R.L. Moore (ES82).
27. Polar Wind and Low-Energy Electron Variations at POLAR Apogee. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 318, 1998. Y.-J. Su, J.L. Horwitz, X.-Y. Wu, T.E. Moore, B.L. Giles, M.O. Chandler, P.D. Craven, S.-W. Chang, and J. Scudder (ES83).
28. Polar Wind Measurements with TIDE/PSI and HYDRA on the Polar Spacecraft. 1998 Western Pacific AGU Meeting, Taipei, Taiwan, July 17, 1998; *Eos*, 79(24), 96, 1998. Y.-J. Su, J.L. Horwitz, T.E. Moore, B.L. Giles, M.O. Chandler, P.D. Craven, S.-W. Chang, and J. Scudder (ES83).
29. POLAR/TIDE Survey of Thermal O<sup>+</sup> Characteristics Near 5000 km Altitude Over the Polar Cap. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F770, 1998. B.A. Stevenson, J.L. Horwitz, Y.-J. Su, H.A. Elliott, R.H. Comfort, T.E. Moore, B.L. Giles, P.D. Craven, M.O. Chandler, and C.J. Pollock (ES83).
30. Recent Results from a Laboratory Study of Charging Mechanisms in a Dusty Plasma. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998; *Eos*, 79(45), F692, 1998. C.C. Venturini, J.F. Spann, Jr., and R.H. Comfort (ES83).

## Published Abstracts (Continued)

31. Role of Superthermal Electrons in Potential Structure Formation (The). 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 287 1998. M.W. Liemohn and G.V. Khazanov (ES83/NRC).
32. Scale in Remote Sensing and GIS: An Advancement in Methods Towards a “Science of Scale.” Abstracts, p. A–13. AAAS Annual Meeting and Science Exposition, Philadelphia, PA, February 12–17, 1998. D.A. Quattrochi (HR20).
33. Search for Giant Convection Cells on the Sun (A). 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 281 1998. D.H. Hathaway (ES82).
34. Search for Vector Magnetic Field Variations Associated with the M–Class Flares of 1991 June 10 in AR 6659 (A). 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 258, 1998. M.J. Hagyard, B.A. Stark, and P. Venkatakrishnan (ES82).
35. Simultaneous Ion Convection in the Polar Magnetosphere and Ionosphere. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), S302 1998. H.A. Elliott, R.H. Comfort, P.D. Craven, M.O. Chandler, and T.E. Moore (ES83).
36. Spacecraft Motion Effects on Current Collection in LEO Space. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 234, 1998. T.X. Zhang, K.S. Hwang, S.T. Wu, N.H. Stone, K.H. Wright, C.L. Chang, and A. Drobot (ES83).
37. Sun in Time (The). 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998, *Eos*, 79(45), F740, 1998. M.L. Adams, T.L. Sever, and E. Bero (ES82).
38. Survey of Substorm Onset Signatures Using Automated Morphology Techniques. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 309, 1998. G.A. Germany, H. Ranganath, W. Swift, P.G. Richards, J.F. Spann, Jr., M. Brittnacher, and G.K. Parks (ES83).
39. Survey of Warm Pancake-Shaped Ion Distributions at Geosynchronous Orbit. 1998 Spring Meeting of the American Geophysical Union, Boston, MA, May 26–29, 1998; *Eos*, 79(17), 292, 1998. D. Ober, M.F. Thomsen, D.L. Gallagher, S.P. Gary, and D.J. McComas (ES83).
40. What the Polar Cap Tells Us About the Substorm Growth Phase. 1998 Fall Meeting of the American Geophysical Union, San Francisco, CA, December 6–10, 1998, *Eos*, 79(45), F779–F780, 1998. M.J. Brittnacher, M.O. Fillingim, D. Chua, M. Wilber, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).



## PRESENTATIONS

1. 3-D Modeling of Directional Solidification of a Non-Dilute Alloy with Temperature and Concentration Fields Coupling via Materials Properties Dependence and via Double-Diffusive Convection. Materials Research Soc. Spring Meeting, San Francisco, CA, April 13, 1998. A.V. Bune, D.C. Gillies, and S.L. Lehoczký (ES75).
2. 3-D Modeling of Double-Diffusive Convection During Directional Solidification of a Non-Dilute Alloy with Application to the HgCdTe Growth Under Microgravity Conditions. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 27, 1998. A.V. Bune, D.C. Gillies, and S.L. Lehoczký (ES75).
3. Aerogel: A Housewarming for Future Space Missions. NASA/National Alliance of University Research Centers 1998 Conference, Huntsville, AL, February 24, 1998. D.A. Noever (ES76).
4. Application of Rotating Magnetic Fields to THM Growth Process: Te-CdTe. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. M. LeClair, A. Worlikar, S. Motakef, and D.C. Gillies (ES75).
5. Assimilation of GOES-derived Skin Temperature Tendencies Into Mesoscale Models to Improve Forecasts of Near Surface Air Temperature and Mixing Ratio. Twelfth Conference on Numerical Weather Prediction, Phoenix, AZ, January 11–16, 1998. W.M. Lapenta, R.T. McNider, R. Suggs, G.J. Jedlovec, and F.R. Robertson (HR20).
6. Beta in Streamers. Solar Wind 9 Conference, Nantucket Island, MA, October 1, 1998. S.T. Suess, G.A. Gary, and S. Nerney (ES82).
7. Beta-Adrenergic Receptor Population is Up-Regulated in Chicken Skeletal Muscle Cells Treated with Forskolin. American Society for Gravitational and Space Biology, Houston, TX, October 26, 1998. K.Y. Bridge, R.B. Young, and J.R. Vaughn (ES76).
8. Bridgman Growth of GeSi Alloys in a Static Magnetic Field. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. M.P. Volz, F.R. Szofran, L. Vujisic, and S. Motakef (ES75).
9. Characteristics of Dynamic Activity in the Dayside Aurora. Thirty-second COSPAR—Advances in Auroral Plasma Physics, Nagoya, Japan, July 12–19, 1998. M.J. Brittnacher, G.K. Parks, D. Chua, R. Elsen, M.O. Fillingim, G.A. Germany, and J.F. Spann, Jr. (ES83).
10. Characterizing Hyperspectral Imagery (AVIRIS) Using Fractal Techniques. AAG Annual Meeting, Boston, MA, March 25–29, 1998. H.-I. Qiu, N. S.-N. Lam, and D.A. Quattrochi (ES41).

## **Presentations (Continued)**

11. Charging of Single Micron-Sized Dust Grains: A Laboratory Study Seventh Workshop on the Physics of Dusty Plasmas, Boulder, CO, April 5–10, 1998. J.F. Spann, Jr. and C.C. Venturini (ES83).
12. CII's During the May 98 CMEs. Rutherford Appleton Laboratory, Chilton Didcot, Oxfordshire, England, September 23, 1998. M.O. Chandler and P.D. Craven (ES83).
13. Cloud Filtering Using a Bi-Spectral Spatial Coherence Approach. Ninth Conference on Satellite Meteorology and Oceanography, Paris, France, May 23–29, 1998. A.R. Guillory, J.M. Lecue, G.J. Jedlovec, and B.N. Whitworth (HR20).
14. Commercial Production of Heavy Metal Fluoride Glass Fiber in Space. Space Technology & Applications International Forum, Albuquerque, NM, January 25–29, 1998. D.S. Tucker G.L. Workman, and G.A. Smith (ES75).
15. Comparisons Between Total Lightning Data, Mesocyclone Strength, and Storm Damage Associated with the Florida Tornado Outbreak of February 23, 1998. Nineteenth Conference on Severe Local Storms, Minneapolis, MN, September 14–18, 1998. S. Hodanish, D. Sharp, E. Williams, B. Boldi, S.J. Goodman, R. Raghavan, A. Matlin, and M. Weber (HR20).
16. Computational Microbial Morphometry and NASA Astrobiology Initiatives. International Conference on Pattern Formation and Dev. Biology, Dundee, Scotland, September 20, 1998. D.A. Noever (ES76).
17. Coronal Heating by Magnetic Explosions. SOHO 7 Workshop, Northeast Harbor, ME, September 28–October 2, 1998. R.L. Moore, D.A. Falconer, J.G. Porter, and S.T. Suess (ES82).
18. Crystal Growth of ZnSe and Related Ternary Compound Semiconductors by Vapor Transport. Microgravity Materials Science Conference, Huntsville, AL, July 14–16, 1998. C.-H. Su, R.F. Brebrick, A. Burger, M. Dudley, R.J. Matyi, N. Ramachandran, Y.-G. Sha, M. Volz, and H.-D. Shih (ES75).
19. Crystal Growth of ZnSe by Physical Vapor Transport—A Modeling Study. ICCG Conference, Jerusalem, Israel, July 26–31, 1998. N. Ramachandran and C.-H. Su (ES76).
20. Crystallization of Chicken Egg White Lysozyme from Sulfate Salts. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. E.L. Forsythe and M.L. Pusey (ES76).
21. The Design and Evaluation of the Lightning Imaging Sensor Data Applications Display (LISDAD). Nineteenth Conference on Severe Local Storms, Minneapolis, MN, September 14–18, 1998. B. Boldi, S. Hodanish, D. Sharp, E. Williams, S.J. Goodman, R. Raghavan, A. Matlin, and M. Weber (HR20).

## **Presentations (Continued)**

22. Determining the Molecular Growth Mechanisms of Tetragonal Lysozyme Crystals. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. H. Li, A. Nadarajah, J.H. Konnert, and M.L. Pusey (ES76).
23. Differential Thermal Analysis of  $\text{Hg}(1-x)\text{Mn}x\text{Te}$  Alloys in the  $X=0$  to 0.3 Range. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. M.W. Price, R.N. Scripa, F.R. Szofran, S.L. Lehoczky, and C.-H. Su (ES75).
24. Diffraction Resolution Limit and Weak Data: Mosaicity and Disorder. International Conference on the Crystallization of Biological Macromolecules (ICCBM), Granada, Spain, May 7, 1998. E.H. Snell and J.R. Helliwell (ES76).
25. Directional Solidification and Characterization of  $\text{Hg}_{0.89}\text{Mn}_{0.11}\text{Te}$ . Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. M.W. Price, R.N. Scripa, F.R. Szofran, S.L. Lehoczky, and C.-H. Su (ES75).
26. Directional Solidification of Mercury Cadmium Telluride in Microgravity. Tenth International Symposium on Experimental Methods for Microgravity Materials Science, 127th TMS Annual Meeting, San Antonio, TX, February 16–19, 1998. S.L. Lehoczky, D.C. Gillies, F.R. Szofran, and D.A. Watring (ES71).
27. Effect of Increased Cyclic AMP Concentration on Muscle Protein Synthesis and beta-Adrenergic Receptor Expression in Chicken Skeletal Muscle Cells in Culture. 1998 Congress on In Vitro Biology, Las Vegas, NV, May 30–June 4, 1998. R.B. Young, J.R. Vaughn, K.Y. Bridge, and C.K. Smith (ES76).
28. Effect of Percolation on the Cubic Susceptibility of Metal Nanoparticle Composites. Nonlinear Optics '98, Princeville, Kauai, HI, August 10–14, 1998. D.D. Smith, M.W. Bender, and R.W. Boyd (ES76).
29. The Effect of Solution Conditions on the Nucleation Kinetics of Tetragonal Lysozyme Crystals. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. R.A. Judge, J.K. Baird, and M.L. Pusey (ES76).
30. The Effect of Solution Parameters on Lysozyme Nucleation Rates and Crystal Quality. The American Crystallographic Association Conference, Washington, DC, July 18–23, 1998. R.A. Judge and E.H. Snell (ES76).
31. Effects of Gravity on Crystallization of Fluorozirconate Optical Fibers. Eighteenth International Congress on Glass, San Francisco, CA, July 5–10, 1998. D.S. Tucker, R.N. Scripa, B. Wang, and J.M. Rigsbee (ES75).

## **Presentations (Continued)**

32. The Effects of Ground and Space Processing on the Properties of Organic, Polymeric, and Colloidal Materials. Fall 1998 Materials Research Society Conference, Boston, MA, November 30–December 4, 1998. D.O. Frazier, M.S. Paley, B.G. Penn, H.A. Abdeldayem, W.K. Witherow, and D.D. Smith (ES01).
33. Environmental Remote Sensing: New Development and Applications. American Association for the Advancement of Science (AAAS), Philadelphia, PA, February 12–17, 1998. D.A. Quattrochi (ES41).
34. Evidence for Microfossils in Ancient Rocks and Meteorites. GSFC System Lecture, GSFC, MD, October 2, 1998. R.B. Hoover (ES82).
35. An Experimental Study of the Effects of a Rotating Magnetic Field on Electrically Conducting Aqueous Solutions. First Pan Pacific Basin Workshop on Microgravity Sciences, Tokyo, Japan, July 8–11, 1998. N. Ramachandran and K. Mazuruk (ES76).
36. Experiments on Nucleation in Different Flow Regimes. Microgravity Materials Science Conference, Huntsville, AL, July 14, 1998. R.J. Bayuzick, W.H. Hofmeister, C.M. Morton, and M.B. Robinson (ES75).
37. The Feasibility of Bulk Crystallization as an Industrial Purification and Production Technique for Proteins. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. R.A. Judge, E.L. Forsythe, M.R. Johns, M.L. Pusey, and E.T. White (ES76).
38. Fluorescence Studies of Lysozyme Nucleation. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, April 30–May 8, 1998. M.L. Pusey and L. Smith (ES76).
39. The Fundamental Gain Limitation of High-Rate Gaseous Detectors and Optimum Designs for High-Rate Applications. 1998 IEEE Nuclear Science Symposium and Medical Imaging Conference, Toronto, Canada, November 8–14, 1998. P. Fonte, V. Peskov, and B.D. Ramsey (ES84).
40. Galactic Superluminal Sources. Third Integral Workshop, Taormina, Sicily, Italy, September 13–18, 1998. B.A. Harmon (ES84).
41. Galaxy Cluster Shapes and Systematic Errors in the Hubble Constant as Determined by the Sunyaev-zel'dovich Effect. 191st American Astronomical Society Meeting, Washington, DC, January 6–10, 1998. M.E. Sulkanen, M.K. Joy, and S.K. Patel (ES84).
42. Gamma Ray Bursts—Afterglows and Counterparts. American Astronomical Society Conference, San Diego, CA, June 7–13, 1998. G.J. Fishman (ES81).

## **Presentations (Continued)**

43. The Generation of Smooth High-Speed Solar Wind from Plume-Interplume Mixing. Solar Wind 9 Conference, Nantucket, MA, October 5–9, 1998. S. Parhi, S.T. Suess, and M.E. Sulkanen (ES82).
44. Global Auroral Energy Deposition During Substorm Onset Compared with Local Time and Solar Wind IMF Conditions. 1998 Cambridge Symposium Workshop on the Physics of Space Plasmas, Lisbon, Portugal, June 22–July 3, 1998. J.F. Spann, Jr., M. Brittnacher, M.O. Fillingim, G.A. Germany, and G.K. Parks (ES83).
45. Global Imaging Mission. Huntsville 98 Meeting, Guntersville, AL, October 26–30, 1998. D. Lummerzheim, J.F. Spann, Jr., and G.K. Parks (ES83).
46. Global Observation of Substorm Growth Phase Processes in the Polar Caps. Huntsville 98 Meeting, Guntersville, AL, October 26–30, 1998. M.J. Brittnacher, M.O. Fillingim, D. Chua, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).
47. Global Plasmaspheric Issues. Geospace Environment Modeling Conference, Snowmass, CO, June 15–19, 1998. D.L. Gallagher and D.L. Carpenter (ES83).
48. Global Ultraviolet Imaging of the Aurora from Space. Yosemite Conference, Toward Solar Max 2000, Yosemite National Park, CA, February 11, 1998. M.J. Brittnacher, R. Elsen, G.K. Parks, M.O. Fillingim, D. Chua, G.A. Germany, D. Lummerzheim, and J.F. Spann, Jr. (ES83).
49. Global Ultraviolet Imaging of the Aurora From Space. Fourth International Conference on Substorms, Lake Hamana, Japan, March 9–13, 1998. M.J. Brittnacher, R. Elsen, G.K. Parks, M.O. Fillingim, D. Chua, G.A. Germany, D. Lummerzheim, and J.F. Spann, Jr. (ES83).
50. Green Fluorescent Protein as a Model for Protein Crystal Growth Studies. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. S. Agena, L. Smith, L.J. Karr, and M.L. Pusey (ES76).
51. The Growth of Protein Crystals Using McDUCK. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. F. Ewing, L.J. Wilson, A. Nadarajah, and M.L. Pusey (ES76).
52. Hard X-ray Observation of Cygnus X-1 by the Marshall Imaging X-ray Experiment (MIXE2). Thirty-second COSPAR Scientific Assembly, Nagoya, Japan, July 12–19, 1998. T. Minamitani, J.A. Apple, R.A. Austin, K.L. Dietz, J.J. Kolodziejczak, B.D. Ramsey, and M.C. Weisskopf (ES84).
53. Helicity of Photospheric Magnetic Fields in Solar Cycle 21. Chapman Conference on Magnetic Helicity, Boulder, CO, July 28, 1998. M.J. Hagyard, A.A. Pevtsov, and R.C. Canfield (ES82).

## **Presentations (Continued)**

54. Highlights of the “Catch-On to Space Science and Astronomy” (COTSA) Workshop. Southern Area Convention, Birmingham, AL, November 19–21, 1998. B.A. Harmon and M. Sahi (ES84).
55. IMAGE Mission Science. Conference, Yosemite, CA, February 9–14, 1998. D.L. Gallagher, M.-C. Fok, S. Fuselier, G.R. Gladstone, J.L. Green, S.F. Fung, J. Perez, P. Reiff, E.C. Roelof, and G. Wilson (ES83).
56. Inert Gases in Crystal Growth Systems: Their Origin, Magnitude, Composition, and Diffusion Through the Ampoule Walls. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. W. Palosz (ES75).
57. Intercomparisons of Total Precipitable Water from Satellite and Other Long-Term Data Sets. Ninth Conference on Satellite Meteorology and Oceanography, Paris, France, May 25–29, 1998, pp. 26–29 1998. F.-C. Chang, G.J. Jedlovec, R.J. Suggs, and A.R. Guillory (HR20).
58. Ion Signatures of Reconnection. Yosemite Conference, Towards Solar Max 2000, Yosemite National Park, CA, February 9–14, 1998. M.O. Chandler, T.E. Moore, F.S. Mozer, and C.T. Russell. (ES83).
59. Large-Scale Coronal Heating, Clustering of Coronal Bright Points, and Concentration of Magnetic Flux. SOHO 7, Northeast Harbor, ME, September 23, 1998. D.H. Hathaway, R.L. Moore, J.G. Porter, and D.A. Falconer (ES82).
60. Locations of Halide Ions in Tetragonal Lysozyme Crystals. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. K. Lim, G. Adimurthy, A. Nadarajah, E.L. Forsythe, and M.L. Pusey (ES76).
61. Long-Term Variability and Transient Behavior of Some Galactic Hard X-ray Sources as Observed with BATSE. Third INTEGRAL Workshop, Taormina, Italy, September 16, 1998. G.J. Fishman (ES81).
62. Magnetic Damping of Solid Solution Semiconductor Alloys. Microgravity Materials Science Conference, Huntsville, AL, July 15, 1998. F.R. Szofran, K.W. Benz, A. Croll, P. Dold, S.D. Cobb, M.P. Volz, and S. Motakef (ES75).
63. Magnetic Field Effects on Convective Fluid Flow in a Vertical Bridgman System. Alabama Materials Research Conference, Birmingham, AL, September 8, 1998. J.C. Wang, S.L. Lehoczky, and D.A. Watring (ES71).
64. The Magnetic Roots of Enhanced Coronal Heating. Meeting on Solar Jets and Polar Plumes, Pointe a Pitre, Guadelope, France, February 23–27, 1998. J.G. Porter (ES82).

## **Presentations (Continued)**

65. Magnetospheric Response to the Arrival of the Shock Wave in Front of the Magnetic Cloud Event of January 10, 1997. COSPAR 32nd Scientific Assembly, Nagoya, Japan, July 12–19, 1998. M. Wuest, M. Huddleston, J.L. Burch, D.L. Dempsey, P.D. Craven, M.O. Chandler, J.F. Spann, Jr., W.K. Peterson, H.L. Collin, and W. Lennartsson (ES83).
66. The Marshall Automated Wind Algorithm for Geostationary Satellite Wind Applications. Ninth Conference on Satellite Meteorology and Oceanography, Paris, France, May 25, 1998. R.J. Atkinson and G.J. Jedlovec (HR20).
67. Mechanics of Granular Materials (MGM) Microgravity Experiment. Third Phase I Research Program Results Symposium, Huntsville, AL, November 5, 1998. K.A. Alshibli and S. Sture (ES71).
68. Mesogranulation as a Distinct Scale of Convection in the Sun. Amer. Astron. Soc. Meeting, Washington, DC, January 6, 1998. K.T. Bachmann, D.H. Hathaway, G. Khatri, and J.M. Petitto (ES82).
69. Microgravity Glovebox Program: Pioneering Partnerships in the Development of Space Glovebox Technology. Defense and Civil Space Programs Conference and Exhibit, Huntsville, AL, October 28–30, 1998. R.P. Chassay, D.W. Jex, D.A. Reiss, B.Q. Musick, D. Collins, and R.C. Darty (HR20).
70. Microgravity Materials and Biotechnology Experiments. Project Re-entry Workshop at UCLA, Los Angeles, CA, March 18–20, 1998. M. Vlasse (ES76).
71. Microstructural Development of Directionally Solidified HgZnSe Alloys. 1998 U.S. Workshop on the Physics and Chemistry of II–VI Materials, Charleston, SC, October 20–22, 1998. S.D. Cobb, S.L. Lehoczky, F.R. Szofran, and K.S. Jones (ES75).
72. *Mir* Glovebox Facility. Proceedings of the Research Program Results Symposium, San Jose, CA, April 1, 1998. R.L. Kroes and D.A. Reiss (ES76).
73. Modeling Electric Field Influences on Plasmaspheric Refilling. Sixth Huntsville Modeling Workshop/Guntersville, AL, October 26, 1998. M.W. Liemohn, J.U. Kozyra, G.V. Khazanov, and P.D. Craven (ES83).
74. Modeling of Physical Vapor Transport in ‘Contactless’ Growth Geometry. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. W. Palosz, L. Lowrey, A. Krishnan, A. Przedwas, and K. Grasza (ES75).
75. Modeling the Growth Rates of Tetragonal Lysozyme Crystal Faces. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. M. Li, A. Nadarajah, and M.L. Pusey (ES76).

## **Presentations (Continued)**

76. Modeling the Plasmasphere. Colloquium/Meeting with the Russian Space Research Institute (IKI). Moscow, Russia, November 16, 1998. D.L. Gallagher (ES83).
77. Modeling the Plasmasphere. Sixth Huntsville Modeling Workshop, Guntersville, AL. October 26–30, 1998. D.L. Gallagher, P.D. Craven, and G. Hajj (ES83).
78. Monte Carlo Simulations of Background Spectra in Integral Imager Detectors. The Third INTEGRAL (International Gamma-Ray Astrophysics Laboratory) Workshop, Taormina, Sicily, Italy, September 14–18, 1998. T.W. Armstrong, B.L. Colborn, K.L. Dietz, B.D. Ramsey, and M.C. Weisskopf (ES84).
79. Multi-Scale Fractal Analysis of Image Texture and Pattern. Association of American Geographers Annual Meeting, Boston, MA, March 25–29, 1998. D.A. Quattrochi, C.W. Emerson, and J.C. Luvall (HR20).
80. Multitemporal and Multiscaled Fractal Analysis of Landsat Satellite Data Using the Image Characterization and Modeling System (ICAMS). Association of American Geographers Annual Meeting, Boston, MA, March 25–29, 1998. D.A. Quattrochi, C.W. Emerson, N.S.-N. Lam, and C. Laymon (ES41).
81. The Mystery of Gamma-Ray Bursts. AAVSO Annual Meeting, Boston, MA, October 30, 1998. G.J. Fishman (ES01).
82. NASA's Microgravity Materials Science Program. 127th Annual TMS Meeting, San Antonio, TX, February 15–19, 1998. D.C. Gillies (ES75).
83. New AFM Techniques for Investigating Molecular Growth Mechanisms of Protein Crystals. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. H. Li, A. Nadarajah, J.H. Konnert, and M.L. Pusey (ES76).
84. A New Synoptic Scale Feature of the Auroral Oval: The Nightside Gap. Huntsville 98 Meeting, Guntersville, AL, October 26–30, 1998. D. Chua, M.J. Brittnacher, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).
85. Novel Electric Nucleation Technique for Growing Large Single Crystal in Space. Tenth International Symposium on Experimental Methods for Microgravity Materials Science, San Antonio, TX, February 16–19, 1998. H. Abdeldayem and D.O. Frazier (ES76).
86. A Novel Method of Gradient Forming and Fluid Manipulation in Reduced Gravity Environments. Thirty-sixth AIAA Aerospace Sciences Meeting, Reno, NV, Jan. 12–15, 1998. N. Ramachandran and F. Leslie (ES71).



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87. Numerical Modeling of Physical Vapor Transport in ‘Contactless’ Crystal Growth Geometry. First Pan-Pacific Basin Workshop on Microgravity Sciences, Tokyo, Japan, July 8–11, 1998. W. Palosz, S. Lowry, A. Krishnan, A. Przekwas, and K. Grasz (ES75/USRA).
88. Observational Review of Gamma-Ray Bursts. Gamma-Ray Bursts in the Afterglow Era, Rome, Italy, November 3–6, 1998. G.J. Fishman (ES01).
89. Observations of Gamma-Ray Bursts. American Physical Society (APS), Columbus, OH, April 18–21, 1998. G.J. Fishman (ES81).
90. Observations of Substorms from the Auroral Ionosphere to the Distant Plasma Sheet. Fourth International Conference on Substorms, Lake Hamana, Japan, March 9–13, 1998. G.K. Parks, M.J. Brittnacher, L. Chen, D. Chua, R. Elsen, M.O. Fillingim, M. McCarthy, G.A. Germany, and J.F. Spann, Jr. (ES83).
91. Observations of Total Lightning Associated with Severe Convection During the Wet Season in Central Florida. Nineteenth Conference on Severe Local Storms, Minneapolis, MN, September 14–18, 1998. D. Sharp, E. Williams, B. Boldi, S.J. Goodman, R. Raghavan, A. Matlin, and M. Weber (HR20).
92. Opportunities Within NASA’s Microgravity Research Program. NASA University Research Center’s Technical Conference, Huntsville, AL, February 22, 1998. D.C. Gillies (ES75).
93. Optical Detection of Lightning From Space. 1998 International Lightning Detection Conference, Tucson, AZ, November 16–18, 1998. D. Boccippio and H.J. Christian (HR20).
94. The Origin and Time Dependence of the Amount and Composition of Non-Constituent Gases Present in Crystal Growth Systems. First Pan-Pacific Basin Workshop on Microgravity Sciences, Tokyo, Japan, July 8–11 1998. W. Palosz (ES75).
95. Origin of Gamma-Ray Emissions From the MeV Blazars. Third INTEGRAL (International Gamma-Ray Astrophysics Laboratory) Workshop, Taormina, Sicily, September 14–18, 1998. K.K. Ghosh and B.D. Ramsey (ES84).
96. An Overview of Electrodynamic Tether Performance in the Jovian System. NASA/JPL, Los Angeles, CA, March 11, 1998. D.L. Gallagher, L. Johnson, F. Bagenal, and J. Moore (ES83).
97. An Overview of the Electrostatic Levitation Facility at NASA’s Marshall Space Flight Center. Microgravity Materials Science Conference, VBC, Huntsville, AL, July 15, 1998. J.R. Rogers, M.B. Robinson, L. Savage, W. Soellner, and D. Huie (ES75).

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98. Particle Engulfment and Pushing by Solidifying Interfaces LMS Mission Results. First Pan-Pacific Basin Workshop and Fourth International Japan/China Workshop on Microgravity Sciences, Tokyo, Japan, July 8–11, 1998. F.R. Juretzko, A. Catalina, D.M. Stefanescu, B.K. Dhindaw, S. Sen, P.A. Curreri, and J. Mullins (ES75).
99. Particle Trajectories in Rotating Wall Cell Culture Devices. Thirty-sixth AIAA Aerospace Sciences Meeting, Reno, NV, January 12–15, 1998. N. Ramachandran and J.P. Downey (ES75).
100. Peculiarities of Crystallization of the Restriction Endonuclease EcoRII. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. E.A. Karpova and M.L. Pusey (ES76).
101. Pharmacy in Space. 145th Annual Meeting of the American Pharmaceutical Association, Miami, FL, March 23, 1998. R.C. Richmond (ES76).
102. Photodeposition Technique for Storing Holographic Images on Thin Films of Polydiacetylene. 1998 Summer Topical Meetings, Kailua-Kona, HI, June 8–12, 1998. H. Abdeldayem, M.S. Paley, W.K. Witherow, and D.O. Frazier (ES76).
103. Physical Vapor Transport of Lead Telluride-Selenide. Twelfth International Conference on Crystal Growth, Jerusalem, Israel, July 26–31, 1998. W. Palosz (ES75).
104. A Plasma Drag Hypervelocity Particle Accelerator (HYPER). 1998 Hypervelocity Impact Symposium, Huntsville, AL, November 17, 1998. S.R. Best and M.F. Rose (ES01).
105. Polar Cap Plasma and Convection. 1998 Huntsville Workshop, Guntersville, AL, October 26, 1998. H.A. Elliott, P.D. Craven, R.H. Comfort, M.O. Chandler, T.E. Moore, C.T. Russell, and J.M. Ruohoniemi (ES83).
106. POLAR/TIDE Perigee Observations of Thermal O<sup>+</sup> Characteristics in the Polar Cap Region. Sixth Huntsville Modeling Workshop, Guntersville, AL, October 26, 1998. B.A. Stevenson, J.L. Horwitz, Y.-J. Su, H.A. Elliott, R.H. Comfort, P.D. Craven, M.O. Chandler, T.E. Moore, B.L. Giles, and C.J. Pollock (ES83).
107. Preparation and Characterization of Fluorescent Derivatives of Lysozyme. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. L. Smith and M.L. Pusey (ES76).
108. Probabilistic and Other Neural Nets in Multi-Hole Probe Calibration and Flow Angularity Pattern Recognition. International Conference on Advances in Pattern Recognition, Plymouth, U.K., November 23, 1998. S. Baskaran, N. Ramachandran, and D.A. Noever (ES76).

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109. The Process of Science Communications at NASA/Marshall Space Flight Center. Public Communication of Science and Technology Conference, Berlin, Germany, September 17–19, 1998. J.M. Horack and D. Treise (ES01).
110. Project Atlanta (Atlanta Land Use and Analysis: Temperature and Air Quality) — A Study of How the Urban Landscape Affects Meteorology and Air Quality Through Time. Second Urban Environment Symposium, Albuquerque, NM, November 2–6, 1998. D. Quattrochi, J.C. Luvall, M.G. Estes, C.P. Lo, S.Q. Kidder, J. Hafner, H. Taha, R.D. Bornstein, R.R. Gillies, and K.P. Gallo (HR20).
111. Radio-Frequency Illuminated Superconductive Disks: Reverse Josephson Effects and Implications for Precise Measuring of Proposed Gravity Effects. Ninth Advanced Space Propulsion Research Workshop and Conference, Pasadena, CA, March 11–13, 1998. D.A. Noever, and R.J. Koczor (ES76).
112. Real Time Characterization of Solid/Liquid Interfaces During Directional Solidification. Third Pacific Rim International Conference on Advanced Materials and Processing, Honolulu, HI, July 12–16, 1998. S. Sen, W.F. Kaukler, P.A. Curreri, and P.N. Peters (ES75).
113. Real-Time X-ray Microscopy of Al-Cu and Al-Au Eutectic Solidification. Tenth International Symposium on Experimental Methods for Microgravity Science, The Metallurgical Society, San Antonio, TX, February 16–19, 1998. W.F. Kaukler, P.A. Curreri, and S. Sen (ES75).
114. Real-Time X-ray Transmission Microscopy for Fundamental Studied Solidification. Space Technology and Applications International Forum (STAIF-98), Albuquerque, NM, Invited Paper, Session C1, January 25–29, 1998. P. A. Curreri, W.F. Kaukler, S. Sen, and P.N. Peters (ES75).
115. Reciprocal Space Mapping of Macromolecular Crystals in the Laboratory. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. E.H. Snell, T.J. Boggon, P.F. Fewster, D.P. Siddons, V. Stojanof, and M.L. Pusey (ES76).
116. Reduction of Defects in Germanium-Silicon. Microgravity Materials Science Conference, Huntsville, AL, July 15, 1998. F.R. Szofran, K.W. Benz, A. Croll, P. Dold, S.D. Cobb, M.P. Volz, S. Motakef, and J.S. Walker (ES75).
117. Remote Sensing Measurements of Vertical and Horizontal Moisture Variations from Aircraft Instruments. Amer. Meteor. Soc., Proceedings of Tenth Symposium on Meteorological Observations and Instrumentation, Phoenix, AZ, January 11–16, 1998. A.R. Guillory, G.J. Jedlovec, and R.J. Atkinson (HR20).
118. Results from Tissue Culture Using Cells Derived from Normal Breast Tissue. Biotechnology Investigator Working Group Meeting, Houston, TX, February 28, 1998. R.C. Richmond (ES76).

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119. The Role of Marangoni Convection for the FZ-growth of Silicon. Forty-ninth IAF Congress, Melbourne, Australia, September 28–October 2, 1998. P. Dold, A. Croll, M. Schweizer, Th. Kaiser, F.R. Szofran, S. Nakamura, T. Hibiya, and K.W. Benz (ES75).
120. Scale in Remote Sensing and GIS: An Advancement in Methods Towards a “Science of Scale.” 1998 American Assoc. for the Advancement of Science Meeting, Philadelphia, PA, February 12–17, 1998. D.A. Quattrochi (HR20).
121. Simultaneous In Situ Optical Monitoring Techniques During Crystal Growth of ZnSe by Physical Vapor Transport. Tenth International Conference on Vapor Growth and Epitaxy, Jerusalem, Israel, July 26–31, 1998. C.-H. Su, S. Feth, and S.L. Lehoczky (ES75).
122. Solar Wind-Magnetosphere Coupling Influences on Pseudo-Breakup Activity. Huntsville '98 Meeting, Guntersville, AL, October 26–30, 1998. M.O. Fillingim, M.J. Brittnacher, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).
123. Space Product Development of Commercial NLO Materials. Photonics East Conference, Boston, MA, November 3–5, 1998. D.O. Frazier, M.S. Paley, B.G. Penn, H.A. Abdeldayem, D.D. Smith, and W.K. Witherow (ES01).
124. The Space Readiness Coherent Lidar Experiment (SPARCLE) Space Shuttle Mission. Laser Radar Technology and Applications II–I, SPIE Conference, Orlando, FL, April 13–17, 1998. M.J. Kavaya and G.D. Emmitt (HR20).
125. SPARCLE: Validation of Observing System Simulations (SPAcE Readiness Coherent Lidar Experiment). The European Symposium on Remote Sensing, Barcelona, Spain, September 21–25, 1998. G.D. Emmitt and T.L. Miller (HR20).
126. Streamer Evaporation. SOHO 7 Workshop, Northeast Harbor, ME, September 23, 1998. S.T. Suess, A.H. Wang, S.T. Wu, and S. Nerney (ES82).
127. Studies of Protein Solution Properties Using Osmotic Pressure Measurements. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. S. Agena, D. Bogle, and M.L. Pusey (ES76).
128. A Study of Undercooling Behavior of Immiscible Metal Alloys in the Absence of Crucible-Induced Nucleation. Microgravity Materials Science Conference, Huntsville, AL, July 14, 1998. M.B. Robinson, T.J. Rathz, D. Li, and G. Workman (ES75).
129. A Substorm Triggered by a Sudden Drop in Dynamic Pressure. Fourth International Conference on Substorms, Lake Hamana, Japan, March 9–13, 1998. R. Elsen, R.M. Winglee, M.J. Brittnacher, G.K. Parks, G.A. Germany, and J.F. Spann, Jr. (ES83).

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130. The Sun and the Solar Wind Close to the Sun. Thirty-second COSPAR Scientific Assembly Presentation, Nagoya, Japan, July 12–19, 1998. S.T. Suess (ES82).
131. The Sun in Time. NSTA, Birmingham, AL, November 20, 1998. M.L. Adams (ES82).
132. Survey of the Polar Wind near 1 and 8Re with POLAR. The Cambridge Symposium Workshop, Lisbon, Portugal, July 3, 1998. J.L. Horwitz, Y.-J. Su, T.E. Moore, B.L. Giles, P.D. Craven, M.O. Chandler, M. Hirahara, and C.J. Pollock (ES83).
133. Tetragonal Lysozyme Interactions Studied by Site Directed Mutagenesis. Seventh International Conference on the Crystallization of Biological Macromolecules, Granada, Spain, May 3, 1998. L. Crawford, L.J. Karr, and M.L. Pusey (ES76).
134. Thermal Characteristics of Urban Landscapes. Twenty-third Conference on Agricultural and Forest Meteorology, Albuquerque, NM, November 2–6, 1998. J.C. Luvall and D.A. Quattrochi (HR20).
135. Three-Dimensional Flows of O<sup>+</sup> Across the Polar Magnetosphere and Convection Reversals Associated with the Polar Cap Boundary. Geospace Environment Modeling Meeting, Aspen, CO, June 19, 1998. H.A. Elliott, R.H. Comfort, P.D. Craven, M.O. Chandler, T.E. Moore, and B.L. Giles (ES83).
136. Total Lightning and Radar Storm Characteristics Associated with Severe Storms in Central Florida. Nineteenth Conference on Severe Local Storms, Minneapolis, MN, September 14–18, 1998. S.J. Goodman, R. Raghavan, D. Buechler, S. Hodanish, D. Sharp, E. Williams, B. Boldi, A. Matlin, and M. Weber (HR20).
137. Total Lightning as a Severe Weather Diagnostic in Strongly Baroclinic Systems in Central Florida. Nineteenth Conference on Severe Local Storms, Minneapolis, MN, September 14–18, 1998. E. Williams, B. Boldi, A. Matlin, M. Weber, S. Hodanish, D. Sharp, S.J. Goodman, R. Raghavan, and D. Buechler (HR20).
138. TRMM Observations of Lightning and Rainfall. Sixth International Conference on Precipitation, Mauna Lani Bay, HI, June 29–July 1, 1998. S.J. Goodman, D. Buechler, and R. Raghavan (HR20).
139. The TSS–IR Electrodynamic Tether Experiment: Scientific and Technological Results. COSPAR, Nagoya, Japan, July 18, 1998. N.H. Stone and J. Raitt (ES83).
140. Ulysses–UVCS Coordinated Observations. SOHO 7, Northeast Harbor, ME, September 23, 1998. S.T. Suess, G. Poletto, G.M. Simnett, G. Corti, M. Neugebauer, and B.E. Goldstein (ES82).
141. Understanding Substorms from the Auroral Ionosphere to the Distant Plasma Sheet. Thirty-second COSPAR–Advances in Auroral Plasma Physics, Nagoya, Japan, July 12–19, 1998. G.K. Parks, M.J. Brittnacher, L. Chen, D. Chua, R. Elsen, M.O. Fillingim, M. McCarthy, G.A. Germany, J.F. Spann, Jr., and R.P. Lin (ES83).

## **Presentations (Continued)**

142. Unloading Versus Driven Processes Derived from Auroral Energy Deposition and Polar Cap Size. Fourth International Conference on Substorms, Lake Hamana, Japan, March 9–13, 1998. M.J. Brittnacher, G.K. Parks, M.O. Fillingim, R. Elsen, D. Chua, G.A. Germany, and J.F. Spann, Jr. (ES83).
143. The Use of Indirect Estimates of Soil Moisture to Initialize Coupled Models and Its Impact on Short-Term and Seasonal Simulations. GCIP Mississippi River Climate Conference, St. Louis, MO, June 8–12 1998. W.M. Lapenta, W. Crosson, S. Dembek, and M. Lakhtakia (HR20).
144. Utilization of Low Gravity Environment for Measuring Liquid Viscosity. Thirty-Second COSPAR Scientific Assembly, Nagoya, Japan, July 12–18, 1998. B. Antar and E. Ethridge (ES75).
145. Variations in Upper-Level Water Vapor Transport Diagnosed from Climatological Satellite Data. Ninth Conference on Satellite Meteorology and Oceanography, Paris, France, May 25, 1998. J.A. Lerner, G.J. Jedlovec, and R.J. Atkinson (HR20).
146. Z-Scan Measurements on Au/SiO<sub>2</sub> Composite Films. Nonlinear Optics '98, Princeville, Kauai, HI, August 10–14, 1998. M.W. Bender, D.D. Smith, R. Xiao, S. Sarkisov, D.A. Gregory, and R.W. Boyd (ES76).

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